ORDER NO. RD82112046C3

Service Manual

Radio Cassette

RX-1490/A

FM-AM Radio Cassette Recorder

■ SPECIFICATIONS

General:

Power Requirement:	AC; 110~115/115~127/200~220/ 230~250 V, 50/60 Hz AC: 240 V 50 Hz (Australia Only) Battery; 7.5 V (Five-UM-1 "D" Size Flashlight Batteries) (National UM-1 or equivalent)
Power Consumption:	8 W (AC only)
Power Output:	2.5 W . . . RMS (max.)
Speaker:	Woofer; 12 cm ($4^{23}/_{32}$") PM Dynamic Speaker (3Ω) Tweeter; 3 cm ($1^{3}/_{16}$") PM Dynamic Speaker (4Ω)
Input:	MIC; sensitivity 0.25 mV (−72 dB)/ applicable microphone impedance 200~600Ω EXT SP; 3~8Ω
Dimensions:	348 mm(W)×223 mm(H)×123 mm(D) ($13^{11}/_{16}$×$8^{13}/_{16}$×$4^{7}/_{8}$)"
Weight:	2.4 kg (5 lb. 4.7 oz.) without batteries

Radio Section:

Radio Frequency Range:	FM; 88~108 MHz AM; 525~1605 kHz (571~187 m)
Intermediate Frequency:	FM; 10.7 MHz AM; 455 kHz
Sensitivity:	FM; 2.8μV/50 mW output AM; 50μV/m/50 mW output

Tape Deck Section:

Frequency Response:	80~9,000 Hz
Recording system:	DC bias, Magnet erase
Tape Speed:	4.8 cm/s, ($1^{7}/_{8}$ ips)
Program Time:	1 hour with C-60 cassette tape
Track System:	2-track 1 channel monaural recording and playback

Specifications are subject to change without notice.

National Panasonic

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

LOCATION OF CONTROLS AND COMPONENTS

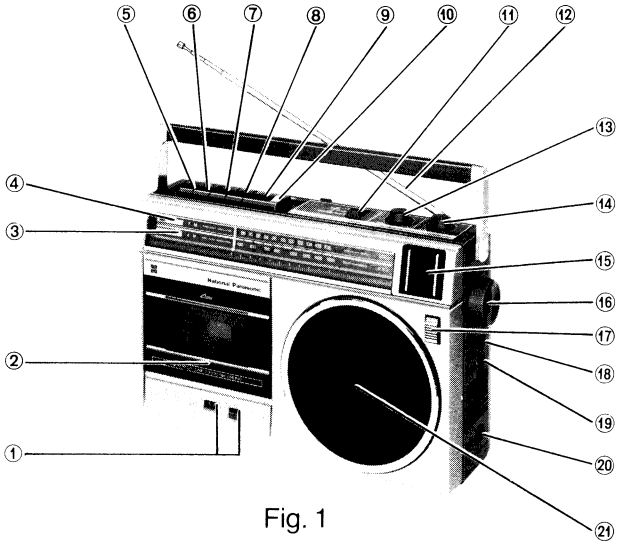


Fig. 1

① Tape Counter and Reset Button (COUNTER)
② Cassette Compartment
③ LED Power Indicator (POWER)
④ LED Record Indicator (RECORD)
⑤ Pause/Eject Button (PAUSE/EJECT)
⑥ Stop Button (STOP)
⑦ Fast Forward/Cue Button (FF/CUE)
⑧ Rewind/Review Button (REW/REVIEW)
⑨ Playback Button (PLAY)
⑩ Record Button (RECORD)
⑪ Selector Switch (SELECTOR)
[POWER OFF /TAPE, AM, FM]
⑫ Telescopic Antenna
⑬ Tone Control (TONE)
⑭ Volume Control (VOLUME)
⑮ Tweeter [3 cm ($1^{3}/_{16}$") 4Ω]
⑯ Tuning Control (TUNING)
⑰ Built-In Microphone (MIC)
⑱ EXT. MIC Jack [0.25 mV(−72 dB) 200~600Ω]
⑲ EXT. SP Jack [3~8Ω]
⑳ AC Socket
㉑ Woofer [12 cm ($4^{23}/_{32}$") 3Ω]

DISASSEMBLY INSTRUCTIONS

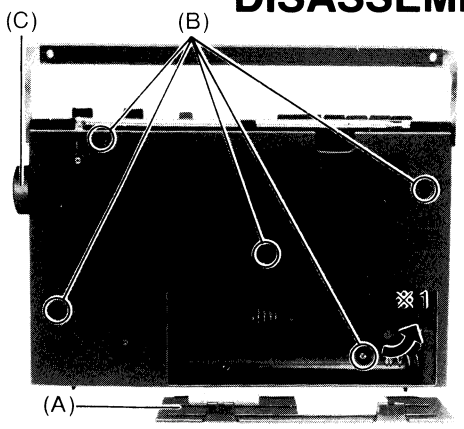


Fig. 2

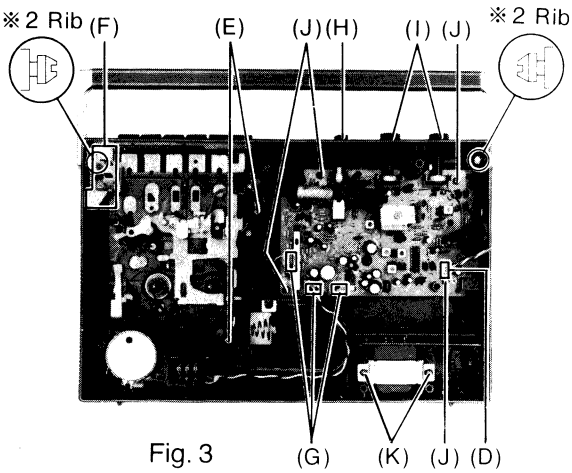


Fig. 3

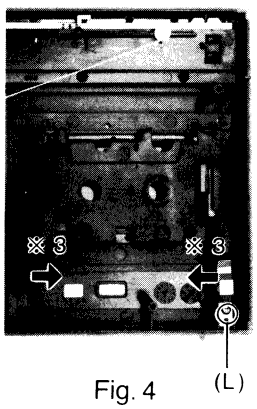


Fig. 4

Fig. 5

*1. When the tape is caught in the pinchi roller, etc.
Remove this cap and release the tape by turning the pulley on the motor with the screwdriver in the direction of the arrow as shown in Fig. 2.
*2. To remove the handle arm, cut the rib of handle arm.
*3. Push the leg of cassette panel in the direction of arrows as shown in Fig. 4.
*4. Put in the deck, watching the recording rod is set in the recording lever, as shown in Fig. 5.

Procedure	To remove—.	Remove—.	Shown in Fig.—.
1	Front Cabinet	Battery Cover ..... (A)×1	2
2		Screw (3×35) ..... (B)×5	2
3		Knob ..... (C)×1	2
4		Socket ..... (D)×1	3
5	Mechanism (*4)	Screw (3×30) ..... (E)×2	3
6		Holder, LED & P.C.B ..... (F)×1	3
7		Socket ..... (G)×3	3
8	Main Circuit Board	Lever Switch Ass'y ..... (H)×1	3
9		Knob ..... (I)×2	3
10		Screw (3×10) ..... (J)×4	3
11	Power Circuit Board	Screw (3×10) ..... (K)×2	3
12	Cassette Panel	Screw (3×10) ..... (L)×1	4

■ DIAL THREADING

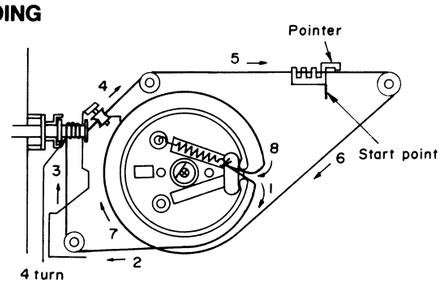


Fig. 6.

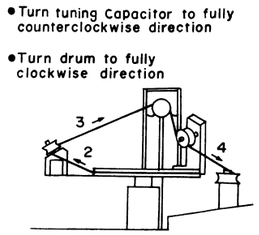


Fig. 7.

MEASUREMENTS AND ADJUSTMENTS

■ ALIGNMENT INSTRUCTION

READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

1. Set volume control to maximum.
2. Set tone control to treble.
3. Selector switch to AM or FM.
4. Set power source voltage to 7.5 V DC.
5. Output of signal generator should be no higher than necessary to obtain an output reading.

■ AM AND FM ALIGNMENT

	BAND	SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING	INDICATOR (ELECTRONICS VOLTMETER or SCOPE)	ADJUSTMENT	REMARKS
		CONNECTIONS	FREQUENCY				
		AM-IF ALIGNMENT					
(1)	AM	Fashion loop of several turns of wire and radiate signal into loop of receiver.	455 kHz 30% Mod. at 400 Hz	Point of non-interference. (on/ about 600 kHz)	Output meter across voice coil.	T3 (AM 1st IFT) T4 (AM 2nd IFT)	Adjust for maximum output.
		AM-RF ALIGNMENT					
(2)	AM	,,	525 kHz	Tuning capacitor fully closed.	,,	L6(AM OSC) Coil)	Adjust for aximum output.
(3)	AM	,,	1,650 kHz	Tuning capacitor fully open.	,,	CT4 (AM OSC Trimmer)	,,
(4)	AM	,,	550 kHz	Tune to signal.	,,	(*1) L5 (AM ANT Coil)	Adjust for maximum output. Adjust L5 by moving coil bobbin along ferrite core.
(5)	AM	,,	1,500 kHz	,,	,,	CT3 (AM ANT Trimmer)	Adjust for maximum output. Repeat steps (2)~(5).
	(*1) Cement antenna bobbin with wax after completing alignment.						
		FM-IF ALIGNMENT					
(6)	FM	High side thru. 0.001 μF to test point ▼6. Negative side to test point ▼2.	10.7 MHz (SWP.)	Point of non-interference. (on/ about 90 MHz)	Connect vert. amp. of scope to test point ▼4. Negative side to test point ▼5.	T1 (FM 1st IFT)	Adjust for maximum amplitude. (Refer to fig. 8.)
(7)	FM	,,	,,	,,	,,	T2 (FM 2nd IFT)	Adjust for maximum amplitude. (Refer to fig. 9.)
		FM-RF ALIGNMENT					
(8)	FM	Connect to test point ▼1 through FM dummy antenna. Negative side to test point ▼2.	86.2 MHz	Variable capacitor fully closed.	Output meter across voice coil.	L4 (FM OSC Coil)	(*2) Adjust for maximum output.
(9)	FM		109.3 MHz	Variable capacitor fully open.	,,	CT2 (FM OSC Trimmer)	,,
(10)	FM		106 MHz	,,	,,	CT1 (FM ANT Trimmer)	(*2) Adjust for maximum output. Repeat steps (8)~(10).
	(*2) Three output responses will be present; proper tuning is the center frequency.						

■ ALIGNMENT POINTS

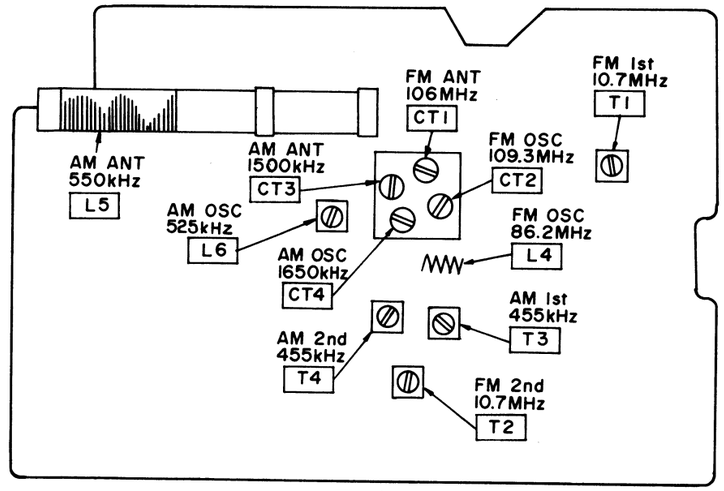


Fig. 10

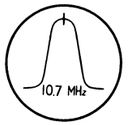


Fig. 8

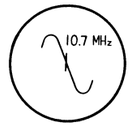
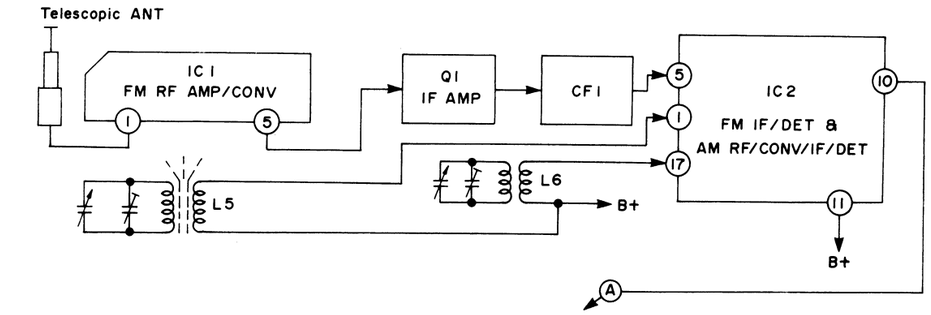


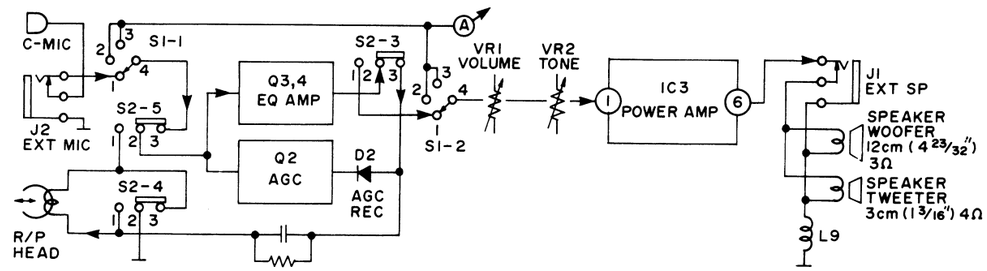
Fig. 9

BLOCK DIAGRAM

<RADIO>



<RECORD>



<PLAYBACK>

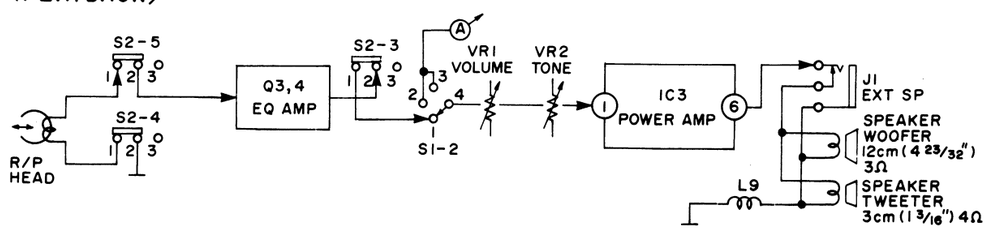
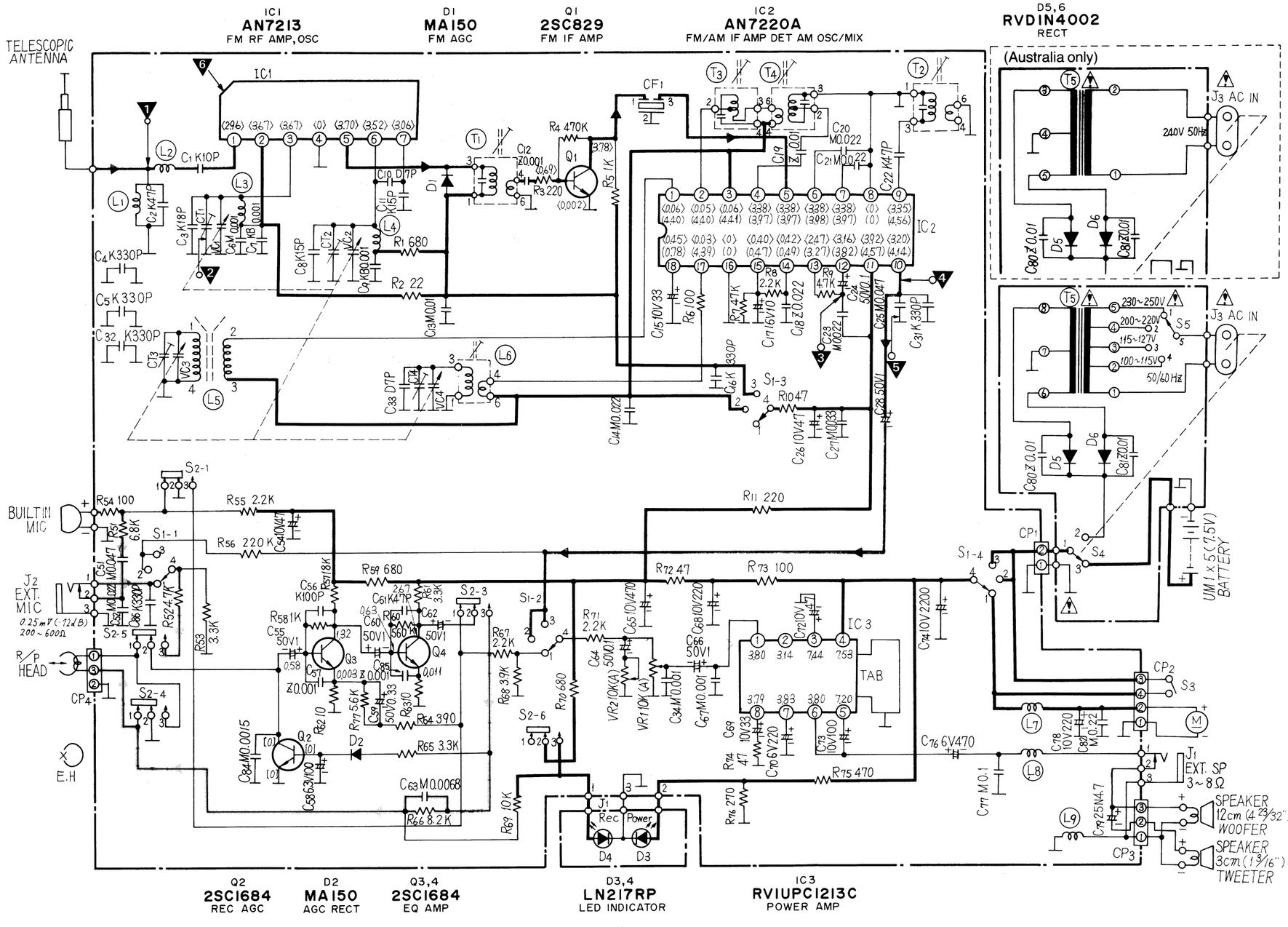


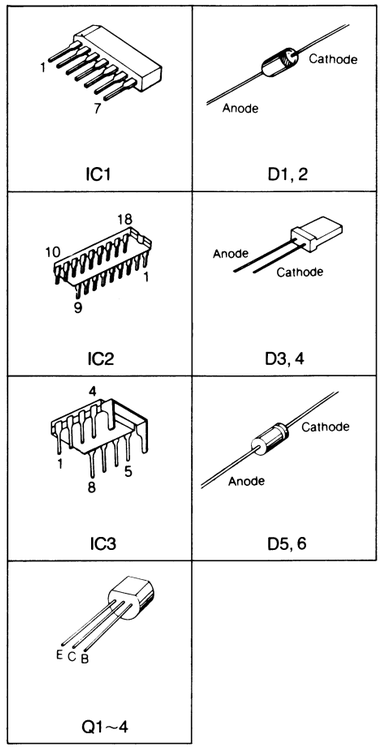
Fig. 11

SCHEMATIC DIAGRAM MODEL RX-1490/A



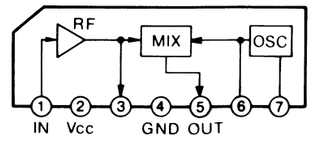
Notes:

1. S1-1~S1-4: Selector switch in "TAPE" position. (1 . . . TAPE, 2 . . . AM, 3 . . . FM)
2. S2-1~S2-6: Record/playback switch in "playback" position. (1 . . . Playback, 3 . . . Record)
3. S3: Motor ON/OFF switch in "OFF" position.
4. S4: AC/DC IN select switch in "DC IN" position. (2 . . . AC, 3 . . . DC)
5. S5: Voltage select switch. (The model for Australia has no AC voltage selector)
6. VR1: Volume control.
7. VR2: Tone control.
8. The mark (▼) shows test point, e.g. ▼ = test point 1.
9. DC voltage measurement are taken with electronics voltmeter from negative terminal of battery.
   < > . . . FM position, ( ) . . . AM position,
   [ ] . . . Recording position.
10. Battery current: No signal . . . . . 38 mA
    Maximum output (radio) . . . . . 260 mA
    Maximum output (tape) . . . . . 320 mA
11. Important safety notice
    Components identified by ⚠ mark have special characteristics important for safety.
    When replacing any of these components, use only manufacturer's specified parts.

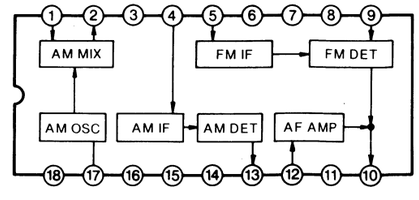


+Ⓑ Voltage Line
Tape (PLAY BACK) Signal Line
Radio (FM) Signal Line
Tape (RECORD) Signal Line

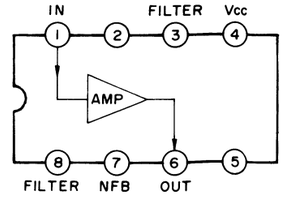
IC1 AN7213



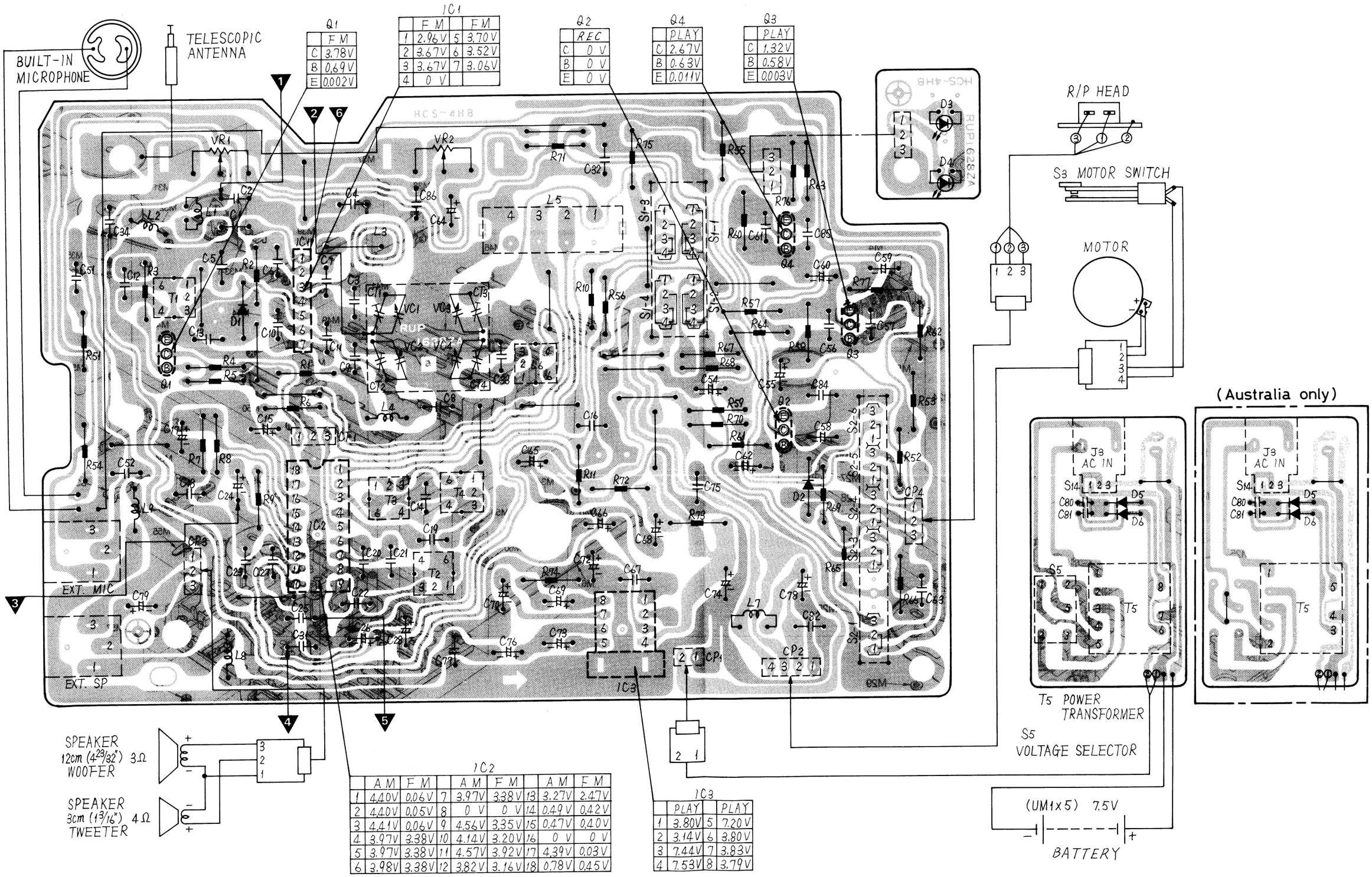
IC2 AN7220A



IC3 RVIUPC1213C



CIRCUIT BOARD AND WIRING CONNECTION DIAGRAM MODEL RX-1490/A



MECHANISM PARTS LOCATION

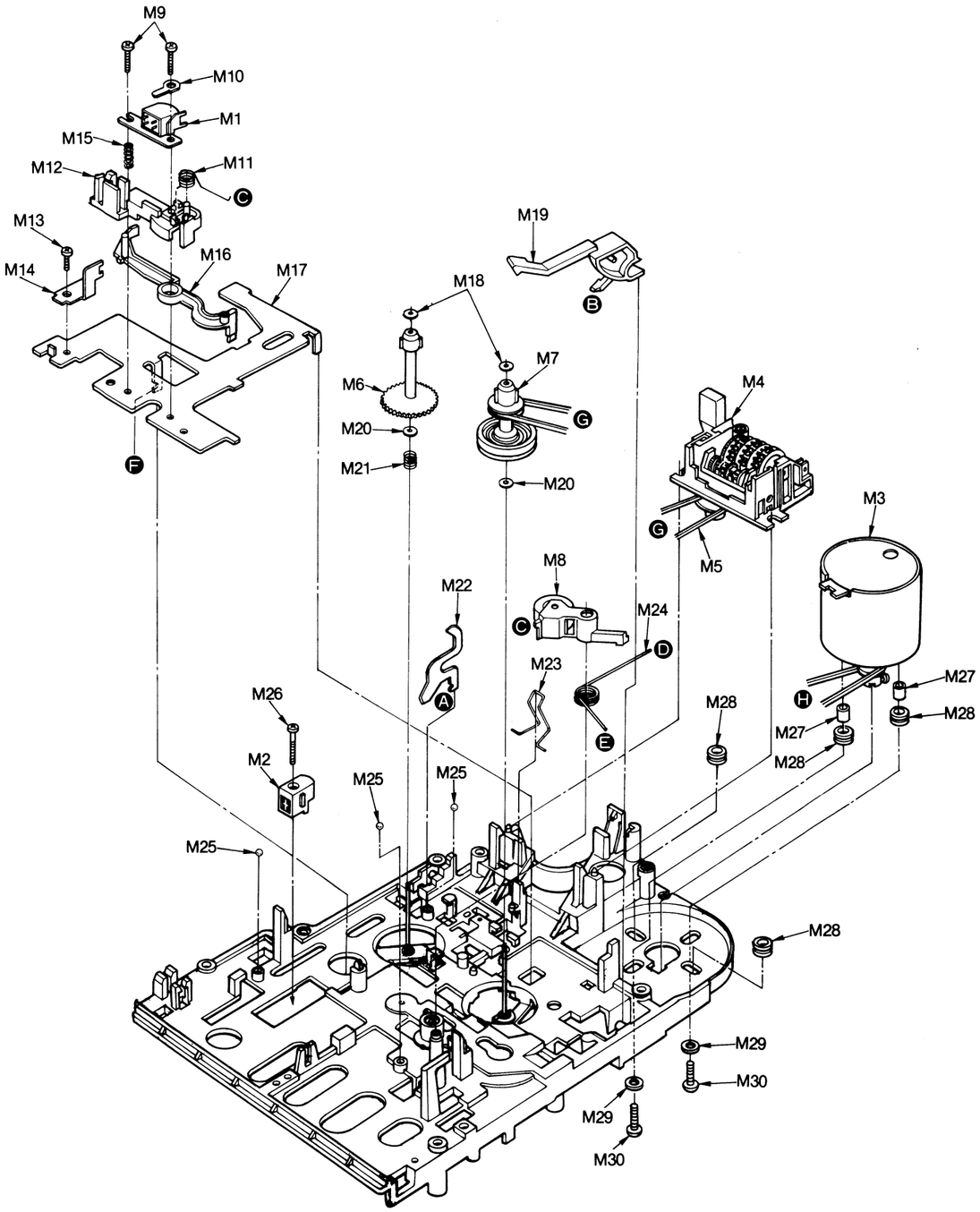


Fig. 12

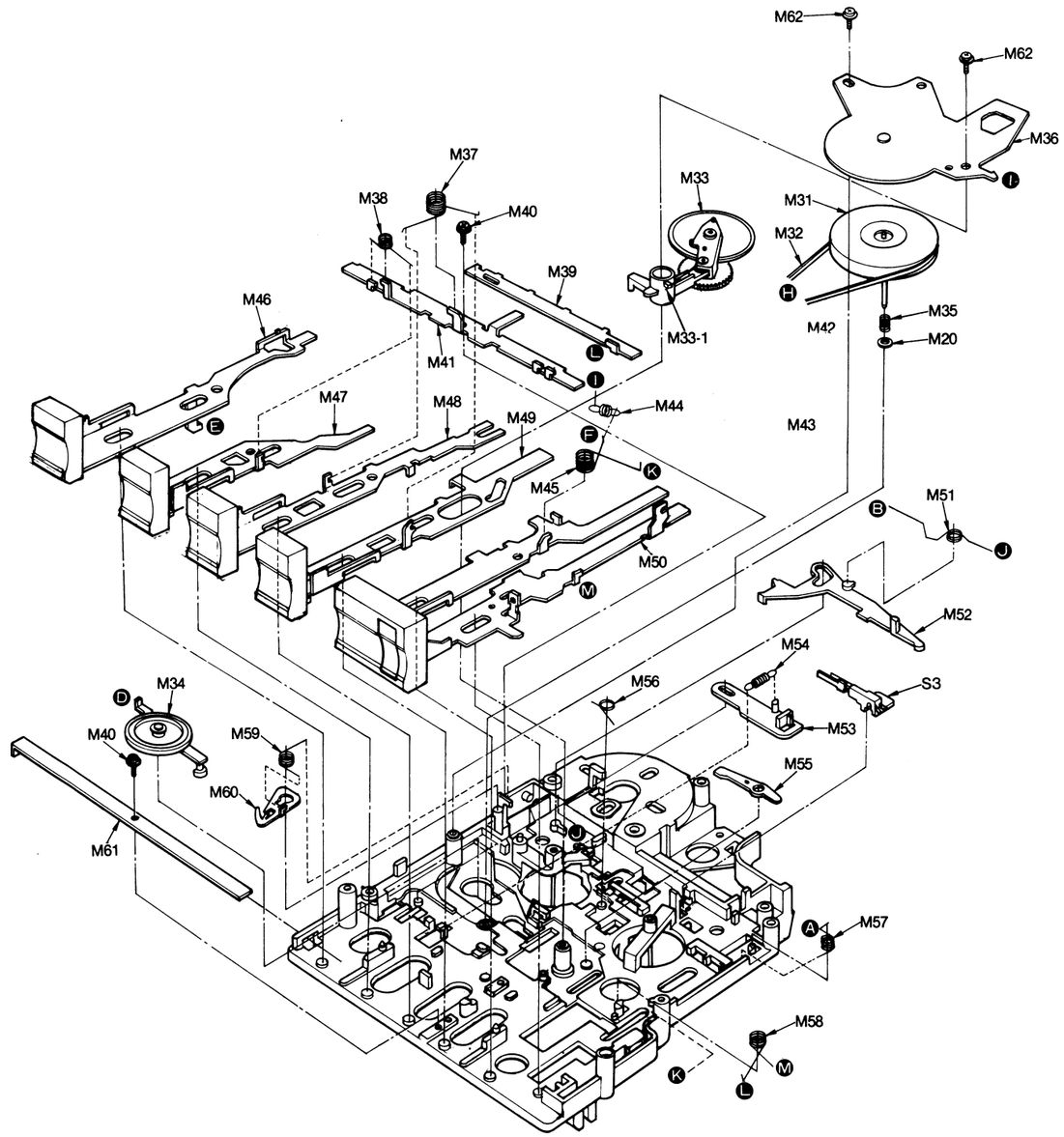


Fig. 13

CABINET AND ELECTRICAL PARTS LOCATION

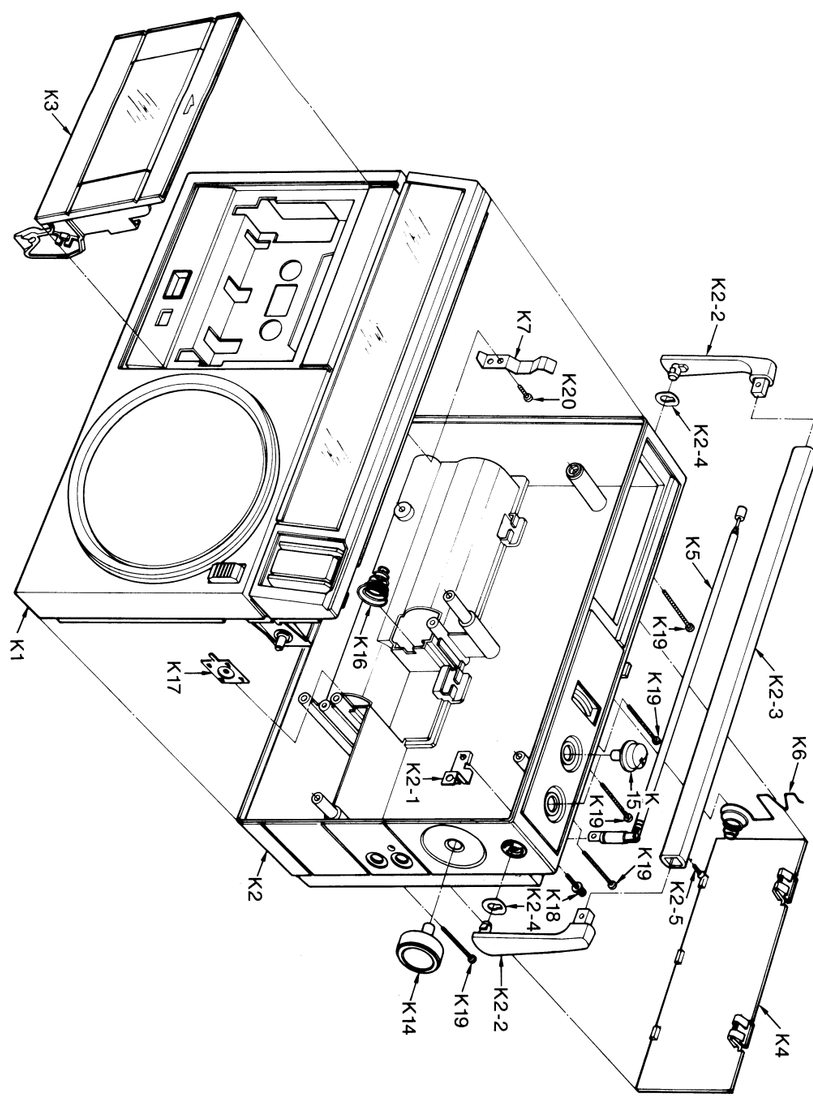


Fig. 14

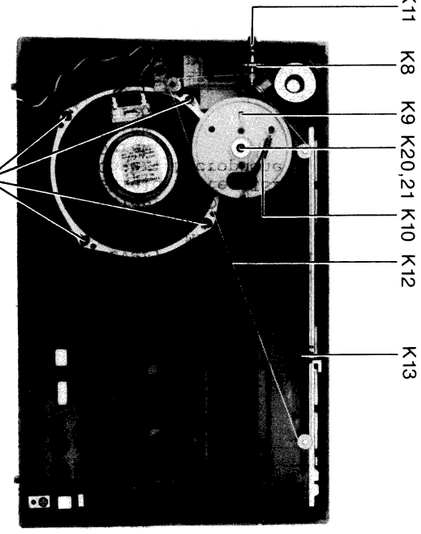


Fig. 15

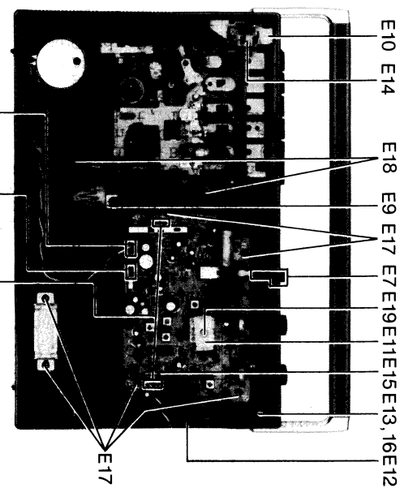


Fig. 16

■ REPLACEMENT PARTS LIST ..... Model RX-1490/A
(RD82112046C3)

NOTES: 1. Important safety notice.
Components identified by ⚠ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.
2. The S mark indicates service standard parts and may differ from production parts.

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
		MECHANICAL PARTS		
M1	QWY0142Z	Head, Record/Playback	1	
M2	QWY2127Z	Head, Erase	1	
M3	QXU4R0300	Motor Ass'y	1	
M4	QDC4R0153	Counter	1	
M5	QDB4R0336	Belt, Counter	1	
M6	QDR1149	Supply Reel Table Ass'y	1	
M7	QXD0118	Takeup Reel Table Ass'y	1	
M8	QXL1401	Pressure Roller Ass'y	1	
M9	XSN2+10	Screw, + 2x10	2	S
M10	QJT0039	Terminal, Head Earth	1	
M11	QBN1774	Spring, Pressure Roller	1	
M12	QMZ1255	Table Head	1	
M13	XSN26+3	Screw, + 2.6x3	1	S
M14	QMG0062	Guide, Tape	1	
M15	QBC1298	Spring, Head Adjusting	1	
M16	QML3672	Lever, Auto-Stop Detector	1	
M17	QMK1874	Plate, Head Base	1	
M18	QBW2008	Washer	2	
M19	QML3670	Lever, Cassette-Up	1	
M20	QBW0043	Washer	3	
M21	QBC4R1434	Spring, Back Tension	1	
M22	QML3669	Lever, Erase Safety	1	
M23	QBN1775	Spring, Cassette Retainer	1	
M24	QBN1773	Spring, Idler	1	
M25	QDK1012	Ball, Steel	3	
M26	XTN26+14F	Screw, + 2.6x14	1	
M27	QMC0079	Pipe, Motor	2	
M28	QBG1420	Cushion, Motor	4	
M29	QBW0042	Washer	2	
M30	XYN26+B7.5	Screw, + 2.6x8	2	
M31	QXF4R0202	Flywheel Ass'y	1	
M32	QDB4R0337	Belt, Flywheel	1	
M33	QXL4R1563	Fast Forward Frame Ass'y	1	
M33-1	QBN1710	Spring, Fast Forward Lever	1	
M34	QXL1400	Idler Lever Ass'y	1	
M35	QBC1359	Spring, Flywheel	1	
M36	QXH4R0419	Flywheel Holding Plate Ass'y	1	
M37	QBN1777	Spring, Fast Forward Rod	1	
M38	QBN4R1709	Spring, Stop Rod	1	
M39	QMR1783	Rod, Lock	1	
M40	XTW26+8S	Screw, + 2.6x8	2	S
M41	QMF2085	Plate, Rod Holding	1	
M44	QBT4R1972	Spring, Base Plate Retainer	1	
M45	QBN1776	Spring, Playback Rod	1	
M46	QXR4R0840	Eject/Pause Rod Ass'y	1	
M47	QXR4R0839	Stop Rod Ass'y	1	
M48	QXR4R0838	Fast Forward/Cue Rod Ass'y	1	
M49	QXR4R0837	Rewind/Review Rod Ass'y	1	
M50	QXR4R0836	Playback Rod Ass'y	1	
M51	QBN1701	Spring, Change Lever	1	
M52	QML3531	Lever, Change	1	
M53	QMR1784	Rod, Auto-Stop Detection	1	
M54	QBT1889	Spring, Auto-Stop Detection Rod	1	
M55	QML3668	Lever, Review	1	
M56	QBN4R1976	Spring, Fast Forward	1	
M57	QBN1783	Spring, Erase Safety Lever	1	
M58	QBN1706	Spring, Record Rod	1	
M59	QBN1705	Spring, Pause Lock Lever	1	
M60	QML3528	Lever, Pause Lock	1	
M61	QMF2131	Plate, Rod Holding	1	
M62	XTW26+10S	Screw, + 2.6x10	2	S
		INTEGRATED CIRCUITS, TRANSISTORS AND DIODES		
IC1	AN7213	IC	1	
IC2	AN7220A	IC	1	
IC3	RVIUPC1213C	IC	1	
Q1	2SC829-C	Transistor (Si)	1	S
Q2	2SC1685-Q	Transistor (Si)	1	S
Q3,4	2SC1684S	Transistor (Si)	2	
D1,2	MA161	Diode (Si)	2	S
D3,4	LN217RP	Diode (LED)	2	
D5,6	RVD1N4002	Diode (Si)	2	
		COILS AND TRANSFORMERS		
L4	RLD4Y43	Oscillator Coil, FM	1	
L5	RLF2V72	Antenna Coil, AM	1	
L6	RLO2B87	Oscillator Coil, AM	1	
L7	RLQZB4R7K	Choke Coil	1	
T1,2	RLI4B153	IFT, FM 1st, 2nd	2	
T3	RLI2B216	IFT, AM 1st	1	
T4	RLI2B217	IFT, AM 2nd	1	
T5	RLT5J6X1A	Power Transformer	1	⚠
T5	RLT5J6A2A	Power Transformer (Australia Only)	1	⚠
		VARIABLE RESISTOR		
VR1,2	EWH3NAF20A14	Variable Resistor, 10kΩ (A) Volume & Tone Control	2	
		VARIABLE CAPACITOR		
VC1~4	RCV4LC2R1A	Tuning Capacitor, w/Trimmer Capacitor (CT1, 2, 3, 4)	1	
		CERAMIC FILTER		
CF1	RVFSFE107MSZ	Ceramic Filter	1	
		SPEAKERS		
	EAS12P218SC	Speaker, 12cm (4-23/32"), 3Ω, Woofer	1	
	RAS3PH02Z	Speaker, 3cm (1-3/16"), 4Ω, Tweeter	1	

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
		SWITCHES		
S1	RSH2F08Z	Switch, Selector	1	
S2	RST3D18Z	Switch, R/P Head	1	
S3	QSB0170	Switch, Motor	1	
S4	Refer to J3	Switch, AC/DC	1	
S5	RSR4A07Z	Switch, Voltage Selector (Not Australia)	1	⚠
		JACKS		
J1,2	QJA0172A	Jack, EXT SP/EXT MIC	2	
J3	RJJ1A2Z	Jack, AC IN	1	⚠
		RESISTORS (Value is in OHMS)		
R1	ERD25FJ681	680 1/4W Carbon	1	S
R2	ERD25FJ220	22 " "	1	S
R3	ERD25FJ221	220 " "	1	S
R4	ERD25FJ474	470 k " "	1	S
R5	ERD25FJ102	1 k " "	1	S
R6	ERD25FJ101	100 " "	1	S
R7	ERD25FJ473	47 k " "	1	S
R8	ERD25FJ222	2.2 k " "	1	S
R9	ERD25FJ472	4.7 k " "	1	S
R10	ERD25FJ470	47 " "	1	S
R11	ERD25FJ221	220 " "	1	S
R51	ERD25FJ682	6.8 k " "	1	S
R52	ERD25FJ472	4.7 k " "	1	S
R53	ERD25FJ332	3.3 k " "	1	S
R54	ERD25FJ101	100 " "	1	S
R55	ERD25FJ222	2.2 k " "	1	S
R56	ERD25FJ224	220 k " "	1	S
R57	ERD25FJ183	18 k " "	1	S
R58	ERD25TJ105	1 M " "	1	S
R59	ERD25FJ681	680 " "	1	S
R60	ERD25TJ564	560 k " "	1	S
R61	ERD25FJ332	3.3 k " "	1	S
R62,63	ERD25FJ100	10 " "	2	S
R64	ERD25FJ391	390 " "	1	S
R65	ERD25FJ332	3.3 k " "	1	S
R66	ERD25FJ822	8.2 k " "	1	S
R67	ERD25FJ222	2.2 k " "	1	S
R68	ERD25FJ392	3.9 k " "	1	S
R69	ERD25FJ103	10 k " "	1	S
R70	ERD25FJ681	680 " "	1	S
R71	ERD25FJ222	2.2 k " "	1	S
R72	ERD25FJ470	47 " "	1	S
R73	ERD25FJ101	100 " "	1	S
R74	ERD25FJ470	47 " "	1	S
R75	ERD25FJ471	470 " "	1	S
R76	ERD25FJ271	270 " "	1	S
R77	ERD25FJ562	5.6 k " "	1	S
		CAPACITORS (Value is in MICRO FARADS except P.P=PICO FARADS)		
C1	ECCD1H100KC	10 P 50V Ceramic	1	
C2	ECCD1H470KC	47 P " "	1	
C3	ECCD1H180KC	18 P " "	1	

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
C4,5	ECCD1H331K	330 P 50V Ceramic	2	
C6	ECKD1H102MD	0.001 " "	1	
C7	ECKD1H102KB	0.001 " "	1	
C8	ECCD1H150KC	15 P " "	1	
C9	ECKD1H102KB	0.001 " "	1	
C10	ECCD1H070DC	7 P " "	1	
C11	ECCD1H150KC	15 P " "	1	
C12	ECKD1H102ZF	0.001 " "	1	
C13	ECKD1H103MD	0.01 " "	1	
C14	ECFT1E223MD	0.022 25V Semi-Conductor	1	
C15	ECEA1AV330	33 10V Electrolytic	1	
C16	ECCD1H331K	330 P 50V Ceramic	1	
C17	ECEA1CV100	10 16V Electrolytic	1	
C18	ECKD1H223ZF	0.022 50V Ceramic	1	
C19	ECKD1H103ZF	0.01 " "	1	
C20,21	ECFT1E223MD	0.022 25V Semi-Conductor	2	
C22	ECCD1H470KC	47 P 50V Ceramic	1	
C23	ECFT1E333MD	0.033 25V Semi-Conductor	1	
C24	ECEA1HV0R1	0.1 50V Electrolytic	1	
C25	ECFT1E333MD	0.033 25V Semi-Conductor	1	
C26	ECEA1AV470	47 10V Electrolytic	1	
C27	ECFT1E333MD	0.033 25V Semi-Conductor	1	
C28	ECEA1HVR22	0.22 50V Electrolytic	1	
C31,32	ECCD1H331K	330 P " Ceramic	2	
C33	ECCD1H070DC	7 P " "	1	
C34	ECKD1H102MD	0.001 " "	1	
C51	ECFT1E473MD	0.047 25V Semi-Conductor	1	
C52	ECFT1E223MD	0.022 " "	1	
C54	ECEA1AV470	47 10V Electrolytic	1	
C55	ECEA1HV010	1 50V "	1	
C56	ECCD1H101KC	100 " Ceramic	1	
C57	ECKD1H102ZF	0.001 " "	1	
C58	ECEA0JV101	100 6.3V Electrolytic	1	
C59	ECEA1HVR33	0.33 50V "	1	
C60	ECEA1HV010	1 " "	1	
C61	ECCD1H470KC	47 " Ceramic	1	
C62	ECEA1HV010	1 " Electrolytic	1	
C63	ECKD1H682MD	0.0068 " Ceramic	1	
C64	ECEA1HV0R1	0.1 " Electrolytic	1	
C65	ECEA1AV471	470 10V "	1	
C66	ECEA1HV010	1 50V "	1	
C67	ECKD1H102MD	0.001 " Ceramic	1	
C68	ECEA1AV221	220 10V Electrolytic	1	
C69	ECEA1AV330	33 " "	1	
C70	ECEA0JV221	220 6.3V "	1	
C72	ECEA1AV470	47 10V "	1	
C73	ECEA1AV101	100 " "	1	
C74	ECEA1AV102	1000 " "	1	
C76	ECEA0JV471	470 6.3V "	1	
C77	ECQG1H104MZ	0.1 50V Polyester	1	
C78	ECEA1AV221	220 10V Electrolytic	1	
C79	ECEA1EN4R7	4.7 25V "	1	
C80,81	ECKD1H103ZF	0.01 50V Ceramic	2	
C82	ECQG1H224MZ	0.22 " Polyester	1	
C84	ECKD1H152MD	0.0015 " Ceramic	1	
C85	ECKD1H102ZF	0.001 " "	1	

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
C86	ECCD1H331K	330 P 50V Ceramic	1	
		CABINET PARTS		
K1	RYMX1490X8	Front Cabinet Ass'y	1	
K2	RYFX1490X	Rear Cabinet Ass'y	1	
K2	RYFX1490AXL	Rear Cabinet Ass'y (For Australia)	1	
K2-1	RJT796Z	Terminal, Antenna	1	
K2-2	RKX200Y	Arm, Handle	2	
K2-3	RKX266Z	Handle	1	
K2-4	RKX165Z	Spacer	2	
K2-5	XTC3+8CFZ	Screw	2	
K3	RYQX1490X	Cassette Lid Ass'y	1	
K4	RYNX1490X	Battery Cover Ass'y	1	
K5	XEAQCR228EAY	Telescopic Antenna	1	
K6	RJC950Z	Terminal Battery (+, -)	1	
K7	RUS485Z	Spring, Cassette Panel	1	
K8	RME317Z	Bracket, Tuning Shaft	1	
K9	RDD656Z	Drum, Dial	1	
K10	RDS4170A	Spring, Dial	1	
K11	RDT8111Z	Shaft, Tuning	1	
K12	RDZ05Z1	Cord, Dial (120cm)	1 ROLL	
K13	RDP858Z1	Pointer	1	
K14	RBN624Z	Knob, Tuning	1	
K15	RBN625Z	Knob, Tone/Volume	2	
K16	QJB0016	Terminal Battery (-)	1	
K17	QJB0042	Terminal Battery (+)	1	
K18	XYN3+F12	Screw	1	
K19	XTB3+35C	Screw	5	
K20	XTV3+10G	Screw	2	
K21	XWG3F13	Washer	1	
		ELECTRICAL PARTS		
E1	RJS2L1Z	Socket (2 Pin)	1	
E2	RJS3L1Z	Socket (3 Pin)	2	
E3	RJS4L1Z	Socket (4 Pin)	1	
E4	RJP2G1Z	Plug (2 Pin)	1	
E5	RJP3G1Z	Plug (3 Pin)	2	
E6	RJP4G1Z	Plug (4 Pin)	1	
E7	RYTX1490X	Lever, Switch Ass'y	1	
E8	RJT462Z	Terminal	12	
E9	RUS486Z	Lever, Record	1	
E10	RME320Z	Holder, LED & P.C.B.	1	
E11	RDE131Z	Lever, Tuning Capacitor	1	
E12	RHR1183Z	Holder, Microphone	1	
E13	RJM144Z	Microphone	1	
E14	RMP197Z	Holder, LED	1	
E15	RMC506Z	Shield Plate (IC2)	1	
E16	RHG553Z	Cover, Microphone	1	
E17	XTV3+10G	Screw	10	
E18	XTN3+30C	Screw	2	
E19	XYN26+C10	Screw	1	
		ACCESSORIES		
	RJA21Z	Power Cord, AC	1	⚠

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
	RJA26Z	Power Cord, AC (For Australia)	1	⚠
	RJN18Z	Cassette Tape	1	
	RJP120ZS	Plug, AC	1	⚠
	RQE13Z	Caution Tag	1	
		PACKING MATERIALS		
	RPK1495Z	Gift Box	1	
	XZB45X60A04	Polyethylene Cover	1	
	RPN9432Z	Pad	1	
		PRINTED MATERIAL		
	RQX4018Z	Instruction Book	1	